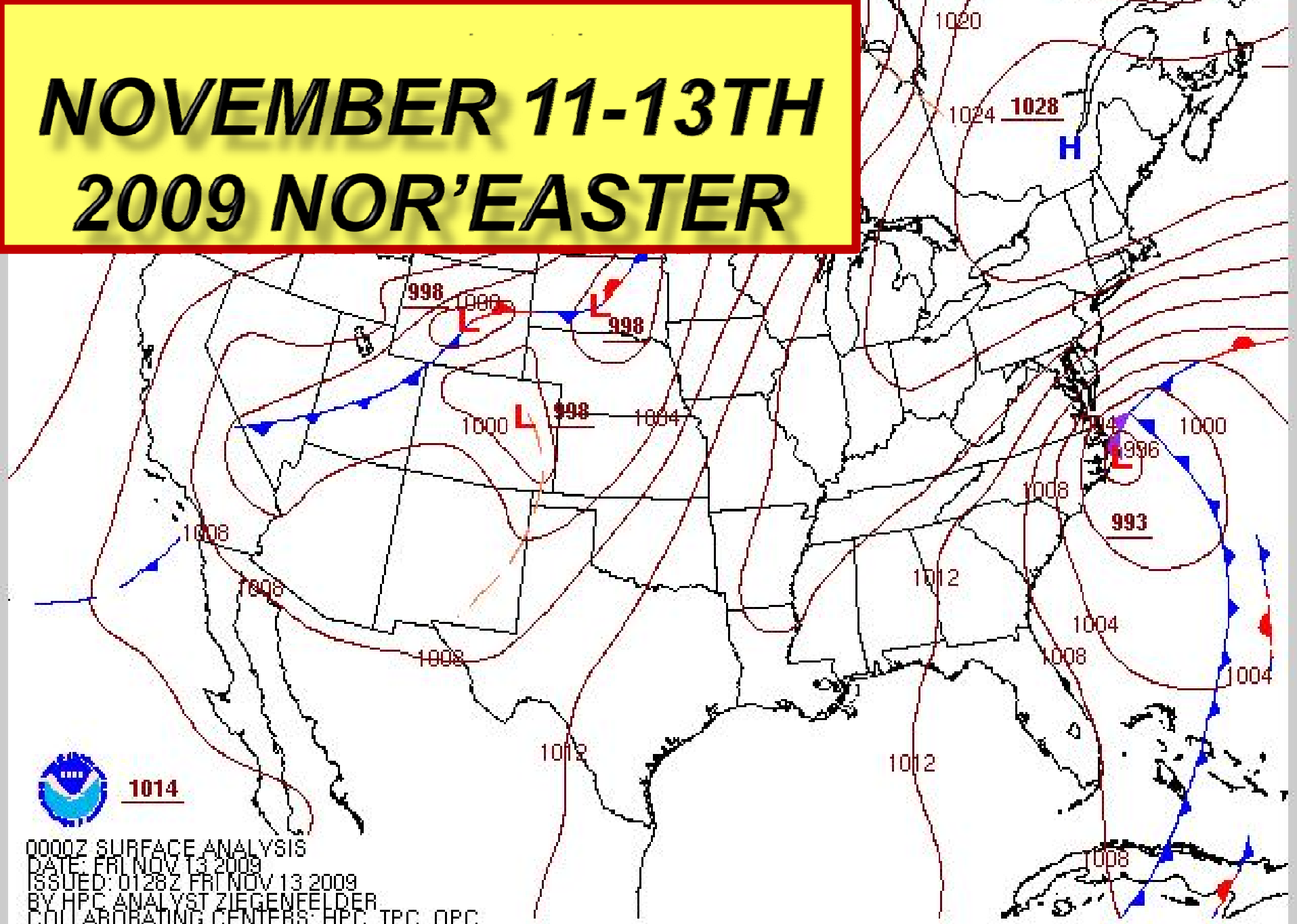
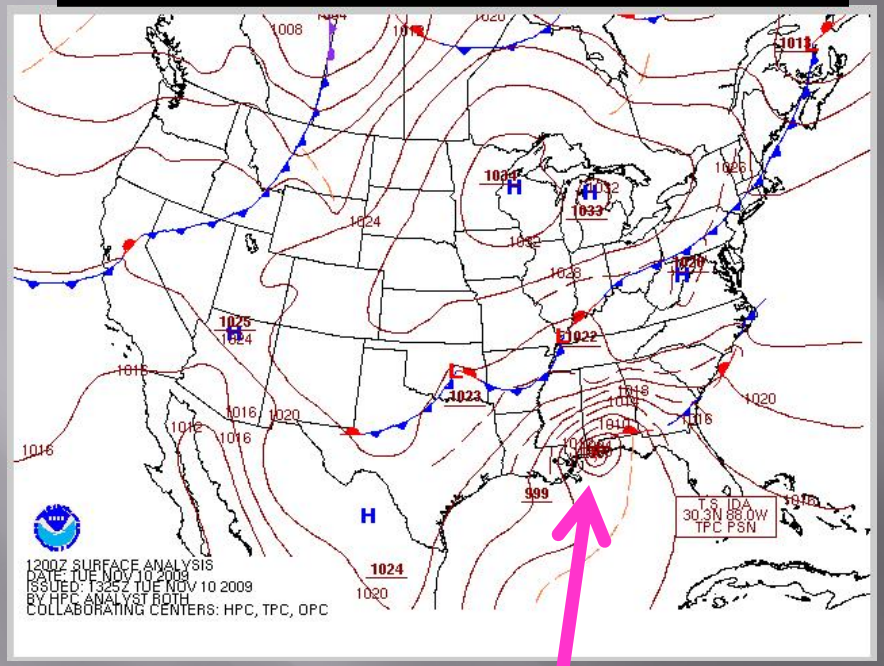
NOVEMBER 11-13TH 2009 NOR'EASTER



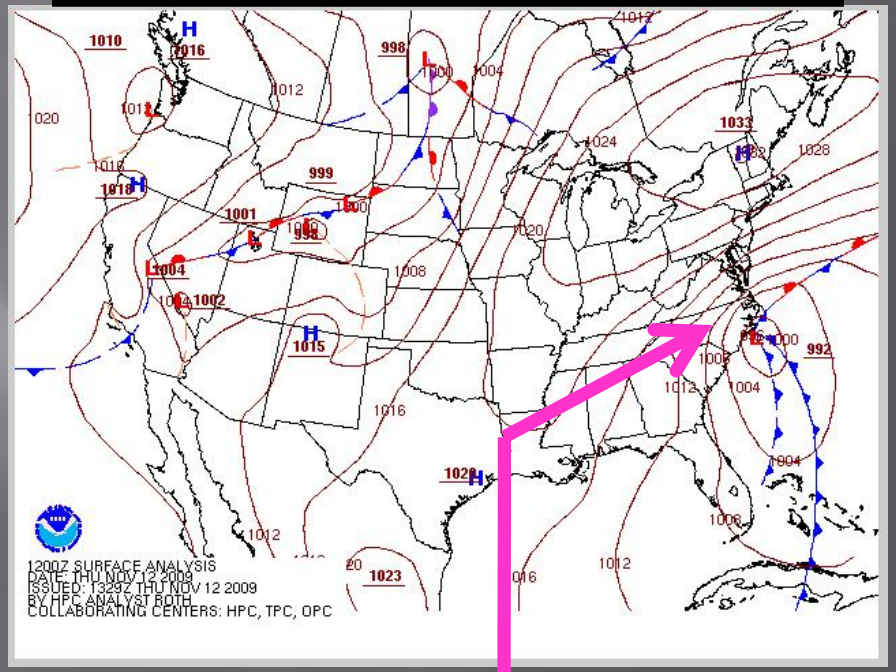
The Synoptic Setup (Surface)

12Z (7 am EST) Tue Nov 10th



Weather across the mid-Atlantic is quiet as Tropical Storm Ida is about to make landfall along the Gulf coast.

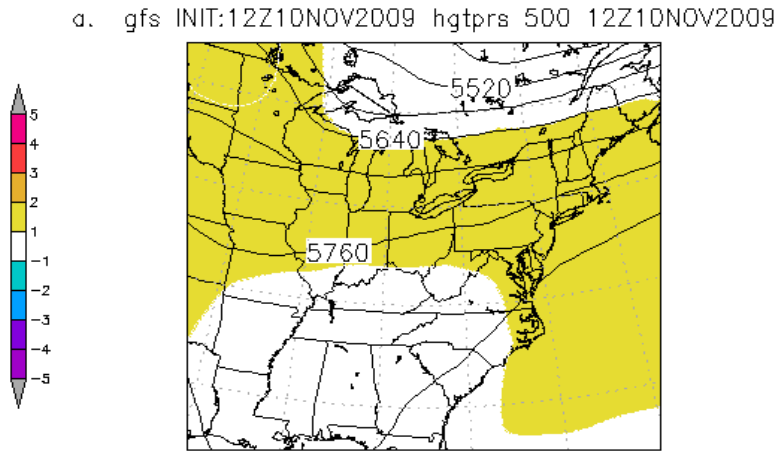
12Z (7 am EST) Thu Nov 12th



Two days later…no longer tropical, low pressure has redeveloped and intensified off the coastal Carolinas. Note the strong pressure gradient between the high pressure system over New England and the coastal low. This pattern allowed strong northeast winds to develop and persist Thursday and Thursday night.

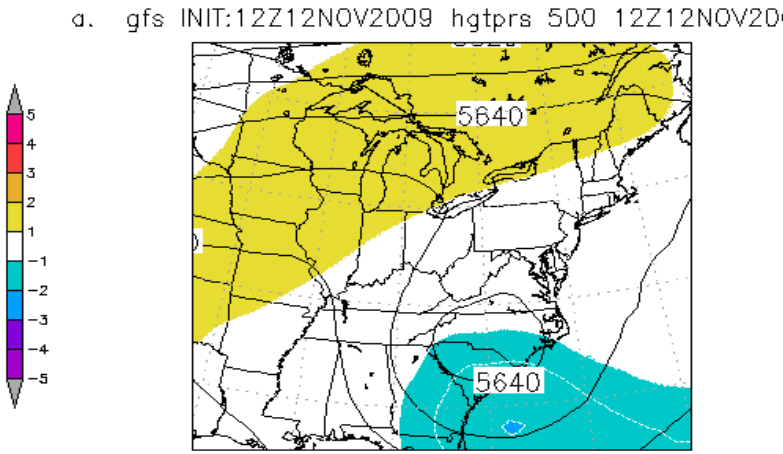
The Synoptic Setup (500 mb)

12Z (7 am EST) Tue Nov 10th



The map above depicts the 500 mb height initialization from the GFS, and the departure (anomaly) from climatology.

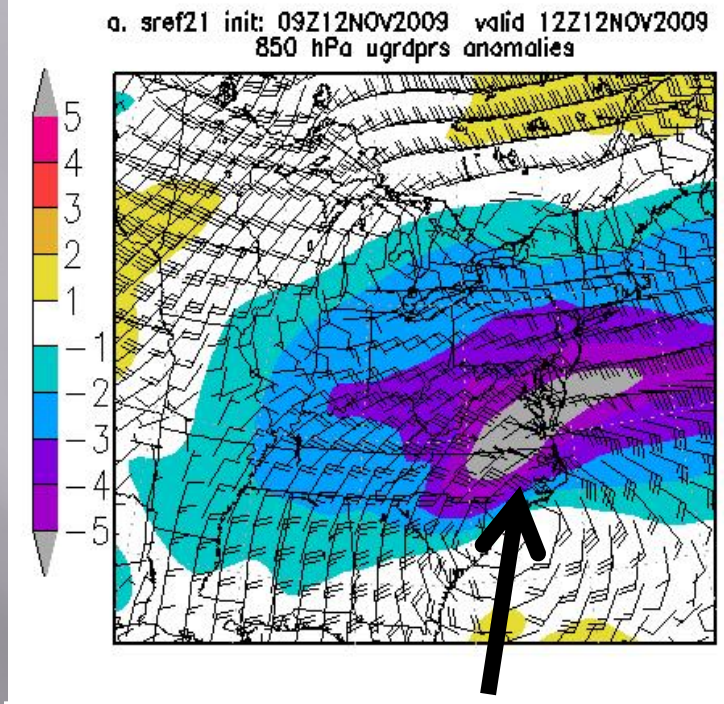
12Z (7 am EST) Thu Nov 12th



Above is the same initialization two days later. Notice the deepening 500 mb trough over the southeastern states (500 mb heights between 1 and 2 standard deviations below normal.

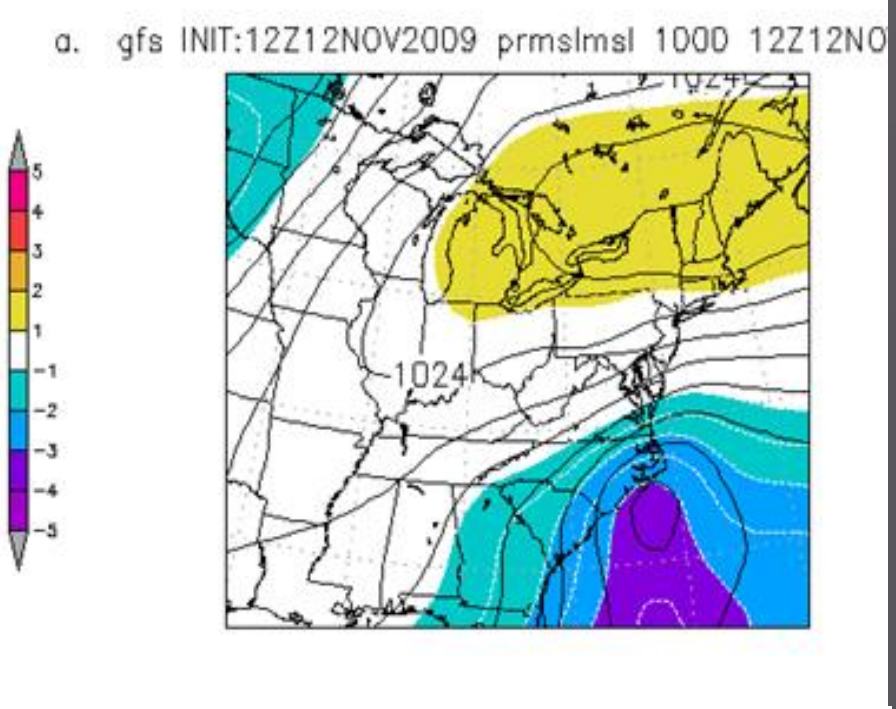
Significant/Anomalous?

Valid 12Z (7 am EST) Thu Nov 12th



The map above depicts the **U** (east-west component) of the 850 mb winds compared to climatology. Note the large area of eastern Virginia that is at least **5 standard deviations** outside of normal. This indicates the potential for an extreme “event”.

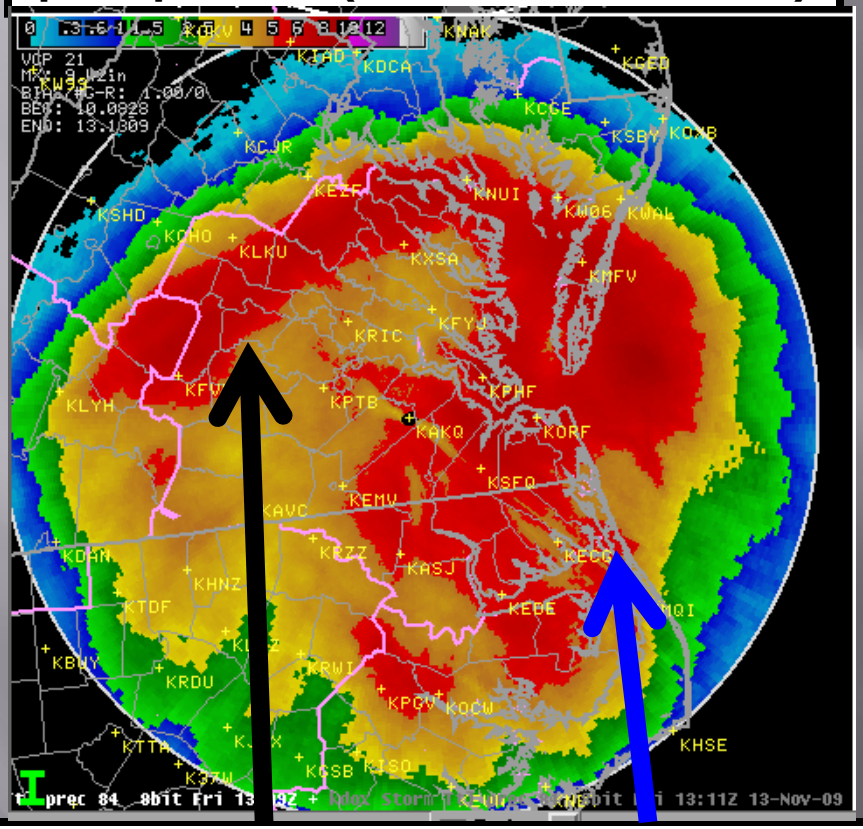
12Z (7 am EST) Thu Nov 12th



The map above is a model depiction of the mean sea level pressure (MSLP) compared to climatology. The combination of a positive anomaly (high pressure over the northeast and New England) and a negative anomaly centered off the coastal Carolinas is a common setup for high winds and a potential extreme “event”.

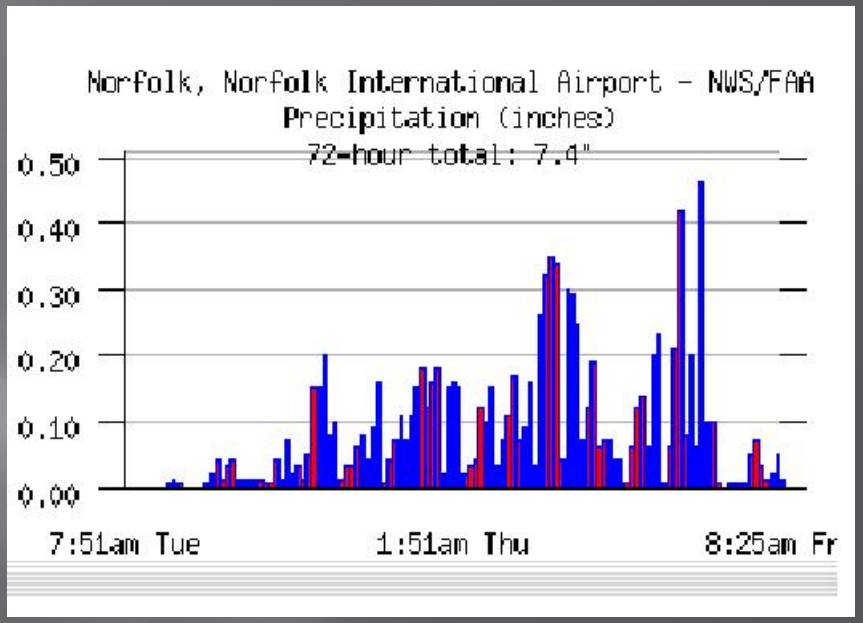
Precipitation?

AKQ Radar Estimated storm total precipitation (as of 8 am Fri 11/13)



The radar overestimated precipitation amounts across northwest portions of the Wakefield CWA (black arrow) due to bright banding. ..in general most of the region received on the order of 3 to 5 inches for the event. Areas of Hampton Roads, eastern Virginia and northeast North Carolina generally received 6 to 8 inches…with local amounts over 10 inches.

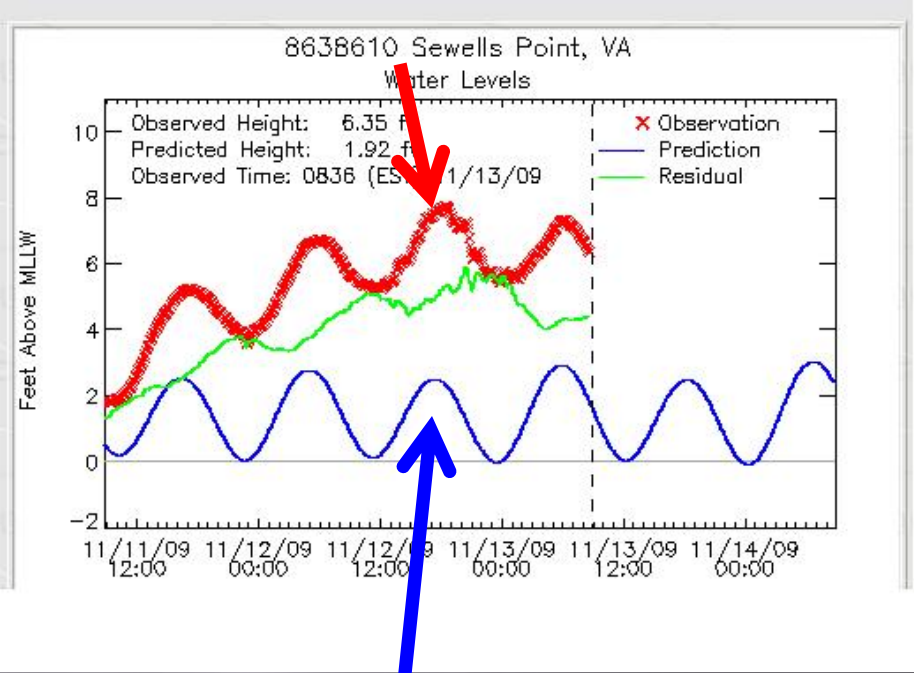
Norfolk Airport Precipitation:



Actual precipitation observations over a 72 hour period for Norfolk International Airport. The 3-day total was 7.40”. This is indeed anomalous, almost triple the normal amount of precipitation at Norfolk for the entire month. In fact, this amount of precipitation over 3 days qualifies as the wettest November on record (since 1871). (previously the wettest November on record occurred in 1951 (7.01”)).

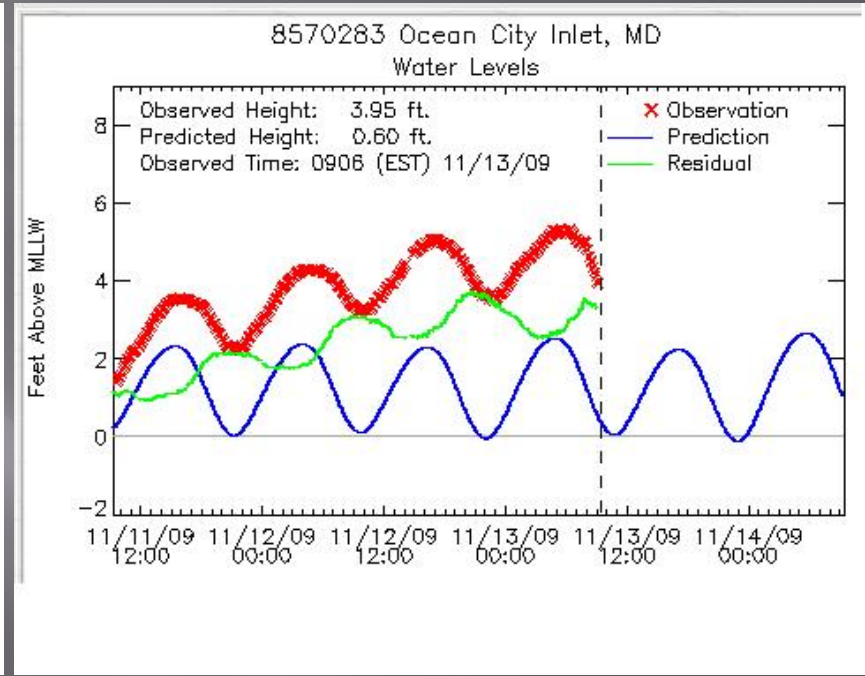
Tidal Flooding?

Sewells Point Tidal Gauge (near Norfolk)



Data shown above shows actual water levels (red line) compared to astronomical tides (blue line). The gauge peaked at **7.74 ft** above mean lower low water (MLLW) at 624 pm EST Thursday November 12th. This was more than 5 feet higher than the astronomical high tide. This value ranks as the ***5th highest*** water level on record since 1930, and is just 0.2 feet below the level recorded during Hurricane Isabel. The highest level on record occurred with the 1933 Hurricane (8.9 ft MLLW).

Ocean City Inlet Tidal Gauge



Data shown above shows actual water levels (red line) compared to astronomical tides (blue line). The Ocean City gauge peaked at **5.34 ft** above mean lower low water (MLLW) at 624 am EST Friday November 13th. This was more than 3 feet higher than the astronomical high tide.

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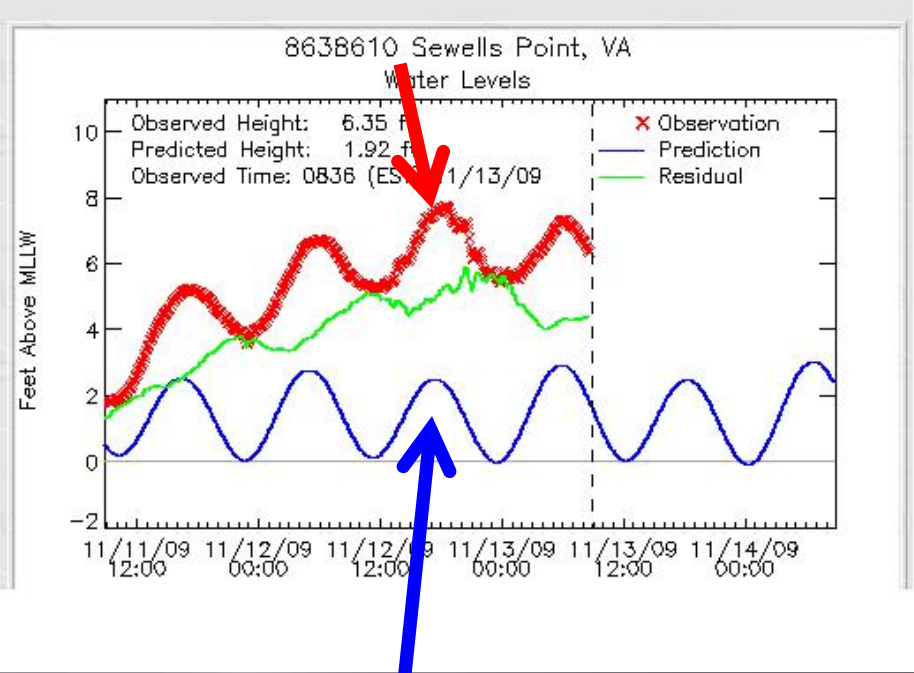

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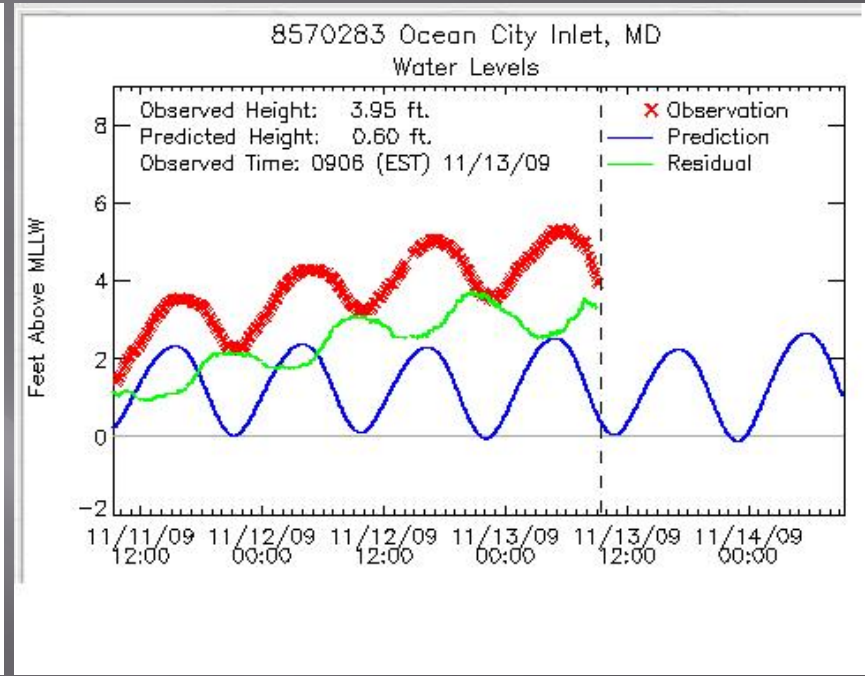

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Winds?

LOCATION	PEAK WIND GUST (MPH)
KNTU (OCEANA VA)	75 (614 PM EST)
KORF (NORFOLK VA)	74 (611 PM EST)
CHYV2 (CAPE HENRY VA)	72 (543 PM EST)
CBBV2 (CHESAPEAKE BAY BRIDGE TUNNEL VA)	71 (800 PM EST)
YKRV2 (YORK RIVER LIGHT VA)	66 (506 PM EST)
44009 (BUOY 15NM E OF FENWICK IS DE)	62 (400 PM EST)
RPLV2 (RAPPAHANNOCK LIGHT VA)	61 (230 PM EST)
KWAL (WALLOPS ISLAND VA)	59 (758 PM EST)
YKTV1 (YORK CG TRAINING FACILITY)	58 (212 PM EST)
WAHV2 (WACHAPREAGUE VA)	57 (600 PM EST)
WEST CRADOCK (SE PORTSMOUTH)	57 (1023 PM EST)
KOXB (OCEAN CITY MD)	56 (1215 PM EST)
KECG (ELIZABETH CITY NC)	54 (204 PM EST)
DUKN7 (DUCK PIER NC)	53 (1012 AM EST)
ASTM2 (ASSATEAGUE ISLAND)	52 (1140 PM EST)
OCIM2 (OCEAN CITY INLET MD)	44 (848 AM EST)